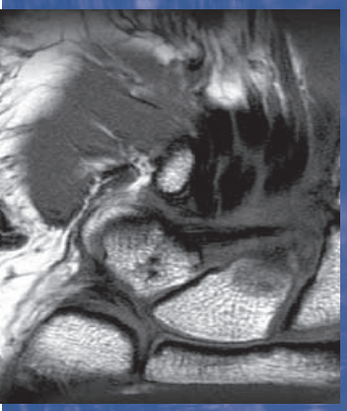
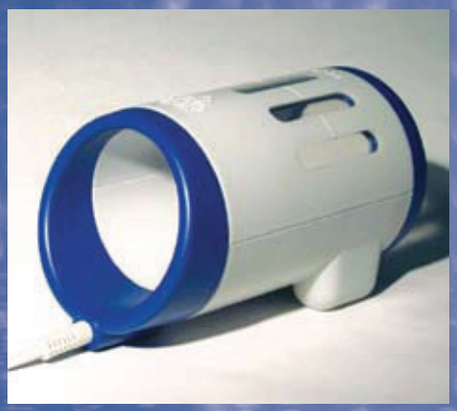
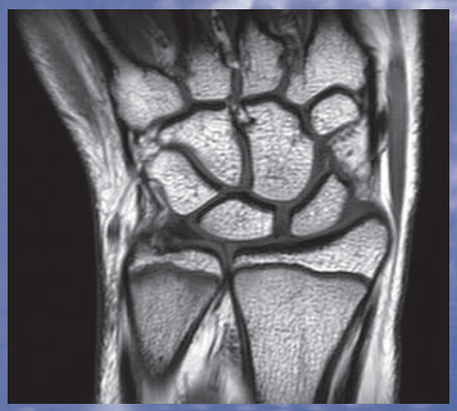
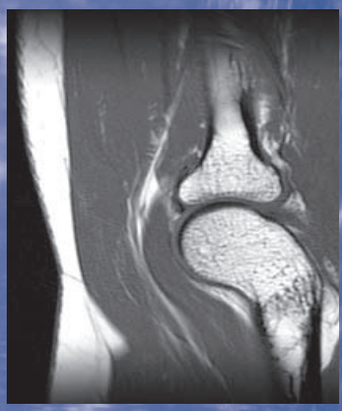
OPERATORS/SERVICE MANUAL

for Medspira BC-10Transmit/Receive MRI Coils

designed for use with GE Healthcare Solutions Signa 1.5T/3.0T MRI

CE 0050

Authorized European Representative:

EC REP

CEpartner4U
Esdoornlaan 13, 3951 DB Maarn
The Netherlands
www.cepartner4u.eu

Products:

- **Medspira BC-10 3.0T (Excite)**
- **Medspira BC-10 1.5T HDX**
- **Medspira BC-10 3.0T HDX/MR750**
- **Medspira BC-10 3.0T HDX/MR750W GEM/NON-GEM**

Operators/Service Manual: MC2617-07 REV 6-13

Manufacturer:

Medspira, LLC
2718 Summer Street NE
Minneapolis, MN 55413
www.medspira.com

English.....**3**

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Section 1 - Introduction

This manual describes the safety precaustions, features, use, and care of the Medspira BC-10 1.5T/3.0T Transmit/Receive MRI coils compatibale with the General Electric Medical Systems' Signa 1.5T/3.0T MRI systems. Please review this manual thoroughly before using the device.

Manufacturer:

Medspira, LLC
2718 Summer Street NE
Minneapolis, MN 55413
www.medspira.com

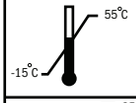
If you have any questions or comments on this manual, or need any assistance with the use of the product, please contact a Medspira representative at (800) 345-4502 or at www.medspira.com

1-1 Operators/Service Manual Information

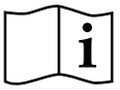
The operators/service manual provides information on how to use the Medspira BC-10 1.5T/3.0T Transmit/Receive MRI Coils. The user should read this manual before using the coil for imaging. The user is advised to refer to the MRI scanner manual in conjunction with this manual.

1-2 Use of Symbols

Operators should understand the following symbols used for caution and warning explanations:

	WARNING or CAUTION: This symbol alerts you to important operating considerations or potential operating condition that can be a risk for impromper function or use of equipment. **ATTENTION: Ce symbole yous alerte sur les conditions opératoires importantes, ou les risques potentiels derivant du fonctionnement anormal de cet appareil.**
	Conformite Europene: compliance to EMC Directive
	Product complies with 2002/96/EC
	Authorized Representative in the European Community
	Do not cross or loop coil cables
	Symbol for Manufacturer
	CAUTION indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury
	WARNING indicates a hazard with a medium levl of risk which, if not avoided, could result in death or serious injury
	Type BF Equipment
	Keep Dry
	**Storage and Transport Temperature Limitations**
	Storage and Transport Humidity Limitations

1-2 Use of Symbols continued:

	**Consult Instructions For Use**
	Package Quantity

1-3 Coil Classification

Class II equivalent

Type BF applied part

Ordinary equipment

Suitable for continuous operation

This product fulfills the requirements of the UL 60601-1 and IEC 60601-1 standards.

Medical Device Directive

These products conform to the requirements of council directive 93/42/EEC concerning medical devices, when they bear the following CE Mark of Conformity:

CE Number - I169: 93/42/EEC

CE 0050

Authorized European Representative:

EC REP

CEpartner4U
Esdoornlaan 13, 3951 DB Maarn
The Netherlands
www.cepartner4u.eu

CAUTION:
Federal law restricts this device to sale, distribution, and use by or on the order of a physician.

1-4 Quality Assurance

The procedure described in the Section 3 Functional Checks of this manual should be performed upon receipt of the coil to establish a baseline of coil performance. The procedure should be repeated at regular intervals.

1-5 Safety

This manual contains detailed information on the setup, positioning, and use of the Medspira BC-10 1.5T/3.0T Transmit/Receive MRI coils. The instructions should be read carefully and thoroughly before attempting to scan patients with the coil.

1-5-1 Coil Operating Safety

Patient safety and comfort should be the primary concern during the scanning procedure. Always follow proper safety, operating, and maintenance procedures to prevent patient exposure to electrical or mechanical hazards that may cause injury.

CAUTIONS:

The following general warning statements apply to scanning with a magnetic resonance imaging (MRI) system. For further details, review the warnings in your MRI system operators service manual.

- Cables should not be looped or crossed, as arcing and patient burns could result.

- Route cables through the center of the magnet bore. Place cables under the cushion and away from patients whenever possible. Routing near the sides of the bore increases the likelihood of cable heating from induced currents.

- Do not allow the coil cable to touch the patient; patient burns could result. Use a thermal resistant material or pad to keep the cable from touching the patient.
- Route the cables to the connector port in the most direct way — without looping or coiling — and avoid bending the cable 180 degrees.

- Visually inspect the cable insulator jacket, strain relief and connector boxes before each use. If the insulation is broken or if the cable is frayed, immediately discontinue use of the device.

- Remove unplugged coils or unused accessory devices from the magnet bore; patient burns could result.
- Remove blue wire-type ECG gating cables from the magnet bore before scanning with surface coils.

- Do not use blue wire-type ECG leads when you are doing gated scans with this coil, as the potential for heating increases. Use peripheral gating, high-impedance ECG leads or thin-film ECG leads rather than blue wire-type ECG leads when you are doing gated scans.

WARNING

- When using any coil, make sure the patient's body does not touch the magnet bore. Use thermal resistant material or padding between the patient and the magnet to prevent burns that could be caused by patient contact with the interior of the magnet bore.
- Use only GE or GE-authorized accessory coils and cables.
- Use only accessories in good condition. If you suspect that an accessory is not in good condition, discontinue its use and contact your local GE service engineer.

WARNING

- Do not use coils with exposed metal conductors or damaged insulation. Skin contact with metal conductors can cause burns.

WARNING

- To help prevent a patient burn from closed loops formed by clasped hands, by hands touching the body, or from thighs or knees contacting over a small area, insert nonconducting pads at least 0.25 inches thick between the touching parts.

1-5-2 Patient Safety

CAUTIONS:

The following general warning statements apply to scanning with a magnetic resonance imaging system. For further details, review the warnings in your MRI system operators service manual.

WARNING

- If a patient complains of burning, tingling, stinging, or other similar "burn"-type sensations, promptly stop the scan procedure, examine the patient, and contact the responsible physician before continuing the procedure. Pay special attention to very young, sedated, or other compromised patients who may not be able to communicate effectively.

WARNING

- Patients with ferromagnetic metal should not be scanned because the magnetic field may interact with implanted surgical clips or other ferromagnetic materials.

WARNING

- Persons with cardiac pacemakers or other implanted electronic devices should not enter the magnetic field zone delineated by the MRI system manufacturer.

WARNING

- There is a risk to scanning feverish or decompensated cardiac patients.

WARNING

- Facial makeup should be removed before scanning because it may contain metal flakes, which can cause skin and eye irritation. Permanent eyeliner tattoos may cause eye irritation due to ferromagnetic particles.

WARNING

- MR Equipment shall limit body core temperature rise to avoid undue heat stress and prevent local tissue damage in the body of the patient. Patients with a core temperature higher than 39.5 C cannot be scanned. Patients with a core temperature higher than 39.0 C can only be scanned in normal operating mode.

WARNING

- Patients who work in environments in which there is a risk of having embedded metallic fragments in or near the eye should be carefully screened before undergoing an MRI exam.

- Prevent all cables from forming loops and coming into contact with the patient. Contact may result in burns to the patient.
- Ensure that the patient is comfortably positioned.
- Monitor the patient periodically. Stop the scan immediately if the patient reports any heating, burning, or tingling sensations.

WARNING

- Ensure patient hearing is properly protected during use.

1-5-3 Emergency Procedures

In the unlikely event that a coil creates smoke, sparks, or makes an unusually loud noise, or if the patient requires emergency assistance:

- Stop the scan if one is in progress.
- Remove the patient from the scanroom if medical treatment is needed.

1-5-4 Indications

The Medspira BC-10 1.5T/3.0T wrist coils will be used in conjunction with several commercially available MRI systems to more accurately image a variety of maladies associated with the hand, wrist, forearm, and elbow. Maladies include, but are not limited to, nerve compression, ligament injuries, tendon abnormalities, and scarring. Its 10 cm diameter design governs the specific area of the body that can be imaged.

1-5-5 Equipment Safety

All personnel using the coil should be instructed in the proper connection and handling of the coil. To ensure proper operation of this coil, the user must ensure that the proper coil configuration has been installed. Since this coil is a transmit/receive design, the BC-10 coil selection must be made for proper operation. Remove this coil from the bore whenever the body coil is activated as a radio frequency (RF) transmitter.

WARNING

- Personnel should observe all warnings and cautions that appear in the guide.

WARNING

- Auxiliary equipment (such as gating equipment, vital signs monitoring systems, and RF coils) that has not been specifically tested and approved for use in the MRI environment may result in burns or other injuries to the patient. This equipment may also interfere with the proper operation of the coil.

CAUTION

- The coil is not suitable for use in the presence of flammable anesthetics in combination with air, oxygen, or nitrous oxide.

- Prevent cables from forming loops. Looping degrades scan performance of the coil through RF coupling.

WARNING

- This equipment is not protected against ingress of water.

NOTE:

This equipment is rated for continuous operation.

NOTE:

For the disposal of this coil at the end of its useful life, please contact a Medspira MRI coil service representative at (800) 345-4502 or contact your municipality or the nearest collection site to dispose of waste equipment.

1-5-6 Electrical and Mechanical Testing & ESD

WARNING

- The coil consists of both electrical and mechanical components. Service personnel must have specialized training to ensure the safe operating condition of the coil. Therefore, only properly trained and qualified personnel should be authorized to service the coil.
- The electrical and mechanical assemblies and parts of the coil must be used with care and should be routinely inspected.
- Before using the coil, visually check it for any external damage. Do not use the coil if the housing or cable is broken.
- Guidance and manufacturer's declaration-electromagnetic immunity. The Medspira BC-10 MRI Coil is intended for use in the electromagnetic environment specified below. The customer of the BC-10 MRI coil should assure that the user is in such environement.

Immunity Test	Compliance Level	Electromagnetic Environment-Guidance	Result/Remarks
Electrostatic Discharge (ESD) IEC 61000-4-2 Direct Contact	Contact +/- 2kv, +/- 4kv, +/- 6kv Air +/- 2kv, +/- 4kv, +/- 8kv	Floors should be wood concrete or ceramic tile, If floors are covered with synthetic material.	No discharge observed; no observed response from Equipment Under Test (EUT)
Electrostatic Discharge (ESD) IEC 61000-4-2 Indirect Contact	Contact +/- 2kv, +/- 4kv, +/- 6kv Air +/- 2kv, +/- 4kv, +/- 8kv	Floors should be wood concrete or ceramic tile, If floors are covered with synthetic material.	No discharge observed; no observed response from Equipment Under Test (EUT)

1-5-7 Modifications

Any changes or modifications to the coil must be approved by Medspira prior to installation.

1-5-8 Reporting of Incidents

- Users should contact a Medspira service representative at 1-800-345-4502 or visit the website at http://www.medspira.com immediately to report an incident and/or injury to a patient, operator, or maintenance employee that occurred as the result of coil operation.
- If an accident occurs as a result of coil operation, do not operate the equipment until an authorized investigation is conducted.

1-6 Shipping Contents

Description	Part Number	Quantity
Medspira BC-10 T/R Coil	BC-10 X.XT	1
BC-10 Phantom Kit	BC-10PK	1
Operators Service Manual	MC2617-07	1
BC10 Positioning Kit (pads and base)		1
Material Safety Data Sheet	(MSDS)	1

1-7 Coil Description

The Medspira BC-10 Transmit/Receive MRI Coil is a quadrature design that has been optimized for specialty high-resolution musculoskeletal imaging. This design is notable for its demonstrated long-term reliability, low-transmit radio frequency (RF) power, high image uniformity, and high image Signal-to-Noise Ratio (SNR). The coil dimensions are approximately 10 cm in diameter and length, and it can operate at frequencies associated with either 1.5T or 3.0T proton imaging. **Note that the coil is designed for one imaging frequency only, and cannot be switched to perform at multiple field strengths.** The operating frequency is identified by the part number on the coil.

The quadrature design improves coil performance and requires appropriate setup to account for the magnetic field direction of your imaging system (i.e., forward versus reverse magnet ramp). If such adjustment is necessary, this will be accomplished by the service technician conducting the initial setup and checkout of this coil.

1-8 Environmental Requirements

Store the coil in an air-conditioned scan room or equipment room.

	Storage	Operating Conditions
Barometric Pressure	860 hPa to 1060 hPa	860 hPa to 1060 hPa
Humidity	20% to 95% noncondensing	45% to 75% noncondensing
Temperature	-15ºC to 55ºC (5ºF to 131ºF)	15ºC to 35ºC (59ºF to 95ºF)

1-9 Coil Specifications

Field Strength	Coil Model	Part Number	Frequency	Dimensions
1.5T	Medspira BC-10 1.5T (HDX) Transmit/Receive Coil	BC-10 1.5T (HDX) (E8800RA)	63.86 MHz	L 23.5 cm W 14 cm H 15 cm
3.0T	Medspira BC-10 3.0T (Excite) Transmit/Receive Coil	BC-10 3.0T (Excite) (E8800RB)	127.72 MHz	L 23.5 cm W 14 cm H 15 cm
3.0T	Medspira BC-10 3.0T (HDX/MR750) Transmit/Receive Coil	BC-10 3.0T (HDX/MR750) (E8800R)	127.72 MHz	L 23.5 cm W 14 cm H 15 cm
3.0T	Medspira BC-10 3.0T (HDX/MR750w GEM/NON-GEM) Transmit/Receive Coil	BC-10 3.0T (HDX/MR750) (E8800R)	127.72 MHz	L 23.5 cm W 14 cm H 15 cm

NOTE:

The BC-10 is suitable for use in an electromagnetic environment. The user of this equipment should ensure that it is used in an MRI environment.

1-10 Coil Installation and Service

Coil installation and configuration require the services of your trained service representative.

Please refer to the appropriate sections for coil installation information.

1-10-1 Coil Installation Procedure (Software and Hardware Configuration)

Software Configuration

The software configuration file must installed be a qualified service representative.

Hardware Configuration

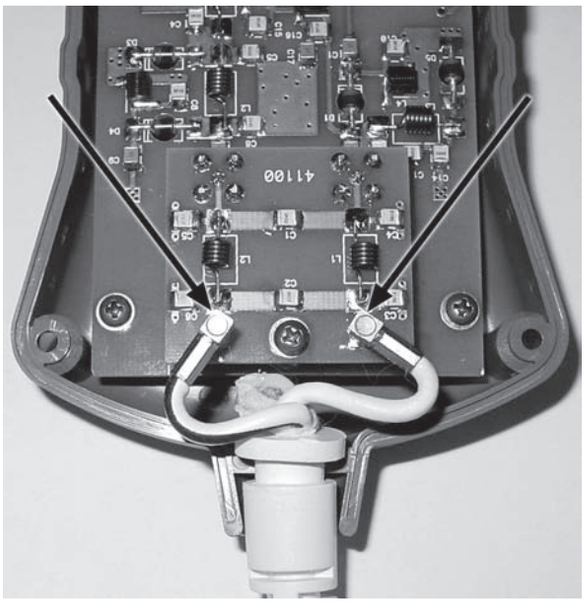
The coil will be sent configured for a forward ramped magnet. If this is not appropriate, the coil can be reconfigured for reverse magnet ramp operation on-site by an appropriately trained service or electronics technician.

Procedure to reconfigure the coil for reverse magnet ramp operation

Open the cover of the connector box using the four screws at each corner. Locate the two cable connectors on the circuit board inside of the connector box (see arrows in the figure below). Disconnect the cables from their present positions (for forward ramped systems) and swap their positions for reverse ramped systems.

The reconfigured connector and BC-10 coil must be tested to ensure that they are set up for the proper magnet orientation. Perform a manual prescan prior to conducting the SNR test using the Phantom and protocol as written in Section 3 of this manual (specifically, see Section 3-2-4). A good signal peak should be evident during the CF coarse portion of the manual prescan, even at a low TG setting (e.g., 20-50). If no peak is seen at a low TG, it is likely that the cables are not connected in the correct polarity for your magnet. The coil should be removed from the scanner and the cable positions inside of the connector swapped as indicated in the previous section. After this is done, return the coil to the scanner, position the Phantom as before and repeat the manual prescan. Verify that the signal

BC-10 HDX Connection Box



level is improved during the coarse CF portion using a low TG setting (e.g., 20-50). Continue using manual prescan to establish the 90-degree flip angle, and then proceed to acquire the SNR image using the methods of Section 3. If the image is low in SNR, refer to images and data in Section 3-2-4 for comparison.

The signal and SNR should dramatically increase when the cables are positioned correctly. After establishing the correct cable positioning within the new connector, enter the SNR and TG data into the table in Section 3-2-4.

General Troubleshooting

[Review System Log] It is important to distinguish receiver coil problems from other system problems. Review the system log to see if errors are present at times when the coil is not being used. Verify that the MRI technologists are not having difficulty with other imaging coils on this system. If errors occur at times when this coil is not being used, it is important to address these problems first.

[Check TG] If the imaging problems are localized to this coil, it may be helpful to know that this is a very efficient transmit/receive coil. It is possible that the incorrect flip angle was determined by the auto prescan procedure for a specific scan (auto prescan may have inadvertently used the 270-degree angle instead of the 90-degree flip angle). One way to check this is to review the TG values determined for all series within the problem exam to see if all series are within ~15 TG units of each other. If the problem image series used a much higher TG, improper flip-angle adjustment may have occured. Alert the technologists to watch for a jump in TG value, and conduct a manual prescan to adjust the TG value prior to scanning. If this problem continues, it may necessitate evaluation of system RF calibration or a change to the config file on your system.

[Config file changes] Changes to the config file should be a rare occurrence and only attempted after other systems tests and adjustments have been made. The field engineer should decide if the TG value established for the coil when patients are being imaged is appropriate. **Note that dramatic changes in this TG value from the time of installation may indicate degradation of the transmitted RF or other system problems.** If the TG is too high or too low and the auto prescan procedure is not determining the proper TG value, you can edit the config file and adjust the transmit attenuation value (see below).

Open the config file for this coil in the editor program and move to the line that matches the following. This establishes the transmitted RF attenuation value.

xmitAtten = “150” \

By **increasing** this transmit attenuation number (e.g., by 10 TG units, or 1 dB), less RF will be applied to the coil at a given TG value — this means that the TG value determined by the auto prescan routine will **increase** (by ~ 10 units). The reverse is true as well — decreasing this value will decrease the auto prescan TG value.

Remember that you must reboot the system for any changes to the config file to be operative.

1-10-2 Coil Service

Coil Cleaning

This coil should be wiped daily with a damp soft cloth using a 10% bleach and 90% tap water solution. **Do not use alcohol or any cleaning solutions containing alcohol or other solvents to clean this coil.**

Other Service

Please have your service technician contact GE Medical Systems for assistance with any other coil service issues.

Section 2 - Setup

2-1 Positioning the Coil

- Remove any other coil or unused accessory device from the magnet before using the coil. Patient burns may result from coupling.
- The coil should be positioned so that the coil cable is oriented down the center of the magnet bore, directly toward the scanner connection port. Maintaining this orientation, which is in alignment with the static magnetic field, will ensure proper operation. While the coil will operate at peak performance when positioned at the magnet isocenter, high-quality imaging will also be achieved when it is positioned to the left or right of isocenter.
- Place a clean cotton sheet (sheet not included) over the positioning pad inside the coil so that the patient's skin will not come in contact with the coil or the positioning pad.
- NOTE: HDX coils must be connected using the "A" side.
- NOTE: Do not loop the coil cable in any way.

2-2 Positioning the Patient

- Position the patient either headfirst in the "swimmers" position or feet first with the anatomy of interest at the patient's side. When the feet-first orientation is used, reposition the patient to the left or right to allow coil placement at or as near to the magnet's center as possible. Determine the anatomy of interest via palpation and using the view windows and centering line guide on the coil for accurate placement, center the coil at the appropriate location.
- Provide earplugs for the patient after all instructions have been given.
- **Hearing protection is required for all people in the scan room during a scan to prevent hearing impairment. Acoustic levels may exceed 99 dB(A).**
- **Hearing protection must have a Noise Reduction Rating (NRR) of 28 dB or better (e.g., 30 dB, 32 dB, etc.).**
- Proceed with scan prescription, select [HD T/R Wrist] at the coil screen.

2-3 Localizing the Anatomy

Align the localizing light so that the anatomy of interest (fingers, hand, wrist, or forearm) lies at the center of the coil. To aid in the centering of the coil in the magnet, positioning aids have been provided on the coil in the form of a centering line embedded in the housing and viewing windows to allow

proper patient positioning within the coil. The localizing light should be aligned with the centering line (positioned at the midpoint of the viewing windows) for positioning accuracy within the bore.

2-4 Recommended Scan Protocols

- Use the system-recommended protocols for scanning with this coil for optimal results and best performance.
- Specific choice of protocols is entirely the responsibility of the radiologist and/or technologist conducting the scan.

Section 3 - Functional Checks

3-1 Scanner Verification

Perform system level Signal-to-Noise Check. Refer to Service Methods CD, System Level Procedures, Functional Checks, Signal-to-Noise Check.

3-2 Coil Imaging Performance Verification

3-2-1 Required Items

Description	Mayo Part Number	Quantity
Phantom and Positioner	BC-10PK	1

NOTE:

Phantom bottle is shipped with premeasured contents and solution.

- 500 mL Nalgene™ IP2 bottle
- 0.50 g (+/- 0.01 g) CuSO4 (+5H20)
- 1.40 g (+/- 0.01 g) NaCl
- 536 mL (+/- 1 mL) distilled water

Please store the Phantom in the same room as the MRI Scanner.

3-2-2 Explanation of Procedure

The image quality check uses one image acquisition for signal and noise data collection. The imaging sequence is spin-echo based in order to minimize susceptibility and B0 inhomogeneity effects.

3-2-3 Signal-to-Noise Ratio (SNR) Scan

1. From the Scan Desktop, start a new scan by selecting **[New Patient]**.
2. Set Patient ID to "QC" and Patient Weight to 111 pounds or 50 kg.
3. Click on **[Patient Position]** to open the protocols window.
4. Place the BC-10 and the Phantom on the patient table as shown in the following photo. The coil should be placed on the patient table pad and positioned so that the cable exits toward the coil connection port of the MRI system.
5. Set the landmark using the alignment lights to the cross hairs marked on the anterior half of the coil.
6. At the magnet, press the "Alignment Lights" button to turn the lights on.
7. Position the coil to align the coil center mark on the outside of the coil housing using the alignment lights.

8. Place the Phantom in the coil using the supplied spacing rings. These will center the Phantom vertically in the coil. **Note: It is critical to align the Z position of the Phantom. This is determined by aligning the mark on the outside label of the Phantom with the center mark on the outside of the coil housing.**
9. Press the "Landmark" button to landmark the alignment.
10. Move the coil to scan position by pushing the "Move to Scan" button, ensuring that the cable does not get pinched or ensnared between the tube/bore and the moving patient cradle.
11. At the operator console, set the acquisition protocol per the Signal-to-Noise Ratio Protocol.
12. Click **[Save Series]** to download the protocols.
13. **Wait at least 10 minutes before proceeding to the next step.**
14. Run **[Auto Prescan].** Record the R1, R2 and TG values from the results of the Auto Prescan. If Auto Prescan fails or TG > 150, perform Manual Prescan to establish the proper TG value.
15. Run **[Scan].**
16. When the scan is completed, run **[Scan]** for a second acquisition.

SNR Coil Setup

Signal-to-Noise Ratio Protocol – Table

Protocol	
Patient/Exam Information	
Patient ID	QC
Patient Name	QC
Patient Weight	111 pounds (50 kg)
Patient Position	
Patient Position	Supine
Patient Entry	Headfirst
Coil	Medspira BC-10
Series Description	SNR
Imaging Parameters	
Plane	Axial
Mode	2D
Pulse Sequence	SE
Imaging Options	Extended Dynamic Range
PSD Name	Leave blank
Protocol	Leave blank
Scan Timing	
Number of Echoes	1
TE	20
TR	430
Bandwidth	15.63
Additional Parameters	
No entries required in this area	
Acquisition Timing	
Freq	256
Phase	128
NEX	1
Phase FOV	1
Freq DIR R/L	
Auto Center Freq	Peak
Autoshim	On
Phase Correct	On
Contrast Off	
Number of Reps B4 Pause	0
Scanning Range	
FOV	14 cm
Slice Thickness	5 mm
Spacing	5 mm
Start S/I 0	
P/ACenter	P30
I/S Center	0
End R/L 0	
Slices 1	
Table Delta	0
NOTE: Scan the above twice.	

3-2-4 SNR Image Analysis

SNR Measurement

Regions of interest (ROI) in the images can be measured directly in the image browser. Click the user interface button **[Measure]**, select the circular ROI shape, and adjust its size and orientation when the shape is displayed on the selected image. The mean, standard deviation and area of the ROI will appear in the lower right corner of the image.

For the signal measurement, choose a circular ROI covering the center 80% of the Phantom. The ROI should be 2,500-3,000 mm2 and is shown in the following figure. The signal is measured as the mean value of this ROI.

The noise measurement is determined by taking the average standard deviation of four ROIs located in the corners of each image outside the Phantom (in air). Select the circular ROI shape and adjust its area to approximately 10% of the area of the ROI in the Phantom (250-300 mm2). Move the ROI to a corner of the image (outside the Phantom) but not completely to the top, bottom, or side edges. Note the mean and standard deviations inside the ROI. Repeat this measurement for all four corners of each image. The noise measurement is the average of all four ROI standard deviations.

The image SNR is calculated using:

$$SNR = \frac{\text{(mean of signal ROI)}}{\text{average standard deviation of noise ROI}}$$

Calculate the SNR for each of the two images. The SNR of the coil is the average of the SNRs obtained from the two images.

SNR Specification

The SNR measurements must be greater than or equal to the following specifications:

1.5 Tesla

SNR:	600 +/- 20%	
e.g.:	Signal in Large ROI:	~6,000-8,000
e.g.:	Mean SD in 4 Corner ROIs:	~10-12

3.0 Tesla

SNR:	1,100 +/- 20%	
e.g.:	Signal in Large ROI:	~7,000-10,000
e.g.:	Mean SD in 4 Corner ROIs:	~6-9

SNR Data Sheet

Use the table provided below to record the calculated SNR (Signal-to-Noise Ratio) and other data to be used as baseline measurements for future comparison.

Date	R1	R2	TG	Signal Mean	S.D. of Noise	SNR	Spec Limit

Section 4 - Maintenance

4-1 Coil Care

Detach coil connector from scanner before attempting to clean. Do not reattach after cleaning until coil has dried completely. Having the coil attached to the system during cleaning or when it is wet may result in electrical shock.

4-1-1 Cleaning Instructions

The coil must be cleaned and stored using the following procedures:

- Wipe with a cloth that has been dampened in a solution of 10% bleach and 90% tap water.
- **DO NOT USE ALCOHOL OR A CLEANER CONTAINING ANY OTHER SOLVENT ON THE COIL!**
- **Do not spray or pour any cleaning solution directly on the coil!**
- Let the coil housing dry before use.
- Store the coil in an air-conditioned scan room or equipment room.

Under no circumstances should the coil be placed into any type of sterilizer!

4-1-2 Storage

Store the coil in an air-conditioned scan room or equipment room.
To store the coil, a storage space of ~ 20 cm x 20 cm x 20 cm is required.
(Refer to page 13, Table 1-8 for room environmental requirements.)

2718 Summer St NE
Minneapolis, MN 55914
www.medspira.com

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